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CONTROL SYSTEM

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23 FEB 1966

MEMORANDUM FOR : Director of Central Intelligence
SUBJECT : Audible Warning Signal for EXCART Aircraft

1. This memorandum is for information only.
2. This memorandum is in response to a comment made at your 10 February 1966 staff meeting wherein it was suggested that consideration be given to installing audible, in addition to visible, warning devices available in the EXCART cockpit to serve as an additional aid to the pilot in case of trouble with critical aircraft components or attitudes.
3. The EXCART emergency pilot warning system includes two audible warning signals. One is a steady tone stall warning signal which is heard when the aircraft angle of attack reaches +14 degrees. The other is an audible landing gear warning signal when (a) the throttles are retarded below minimum cruise setting, (b) the landing gear is not in the down and locked position, and (c) the aircraft altitude is below 10,000 feet \pm 500 feet. The remainder of the emergency warning system is tied in to an annunciator panel mounted on the lower instrument panel in the cockpit which contains individual warning lights that indicate malfunctions or failures of equipment and systems. Illumination of any individual light also illuminates a red master caution light 2 1/4" x 3/4" directly in front of the pilot on the upper portion of the instrument panel which is very bright and essentially impossible to ignore. Thirty-four individual pieces of equipment or systems are currently monitored on the annunciator panel.

4. It is interesting to note that the F-104 airplane was the first to use an annunciator panel for monitoring

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malfunctions or failures of equipment and systems. As part of this monitoring system a tone signal was used to alert the pilot whenever an annunciation panel light came on. However, at the specific request of the pilots, this tone signal was removed; the reason being that the tone signal was almost continuous due to the nature of the annunciation panel monitoring function. As an example, fuel pressure is monitored and a light comes on when the pressure falls to a certain level. However, the level selected to activate the light is well above the minimum allowable and is only to inform the pilot of the status. When the pressure returns to the minimum acceptable, the light goes off. Other items such as oil temperature, hydraulic pressure, etc., are similarly monitored so that the lights are continually going on and off.

5. The experience gained from the F-104 program was very instrumental in defining the present A-12 warning system. Nevertheless, another assessment is being made of the OSCART emergency cockpit warning system to ensure that the pilots have the maximum assistance possible to identify as early as practicable impending critical malfunctions or failures.

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Signature recognized

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(Signed) [redacted]

ABD/OSA

ALBERT D. WHEELON
Deputy Director
for
Science and Technology

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ABD/OSA/[redacted]:sp (21 Feb 66)

Cy 1, 2 - DCI
3 - DD/BAT chrono
4, 5 - DD/BAT Registry
6 - D/OSA
6, 7, 8 - D/TECH/USA
9 - D/TECH/OSA
10 - ABD/OSA chrono
11 - DB/OSA

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